

1/20

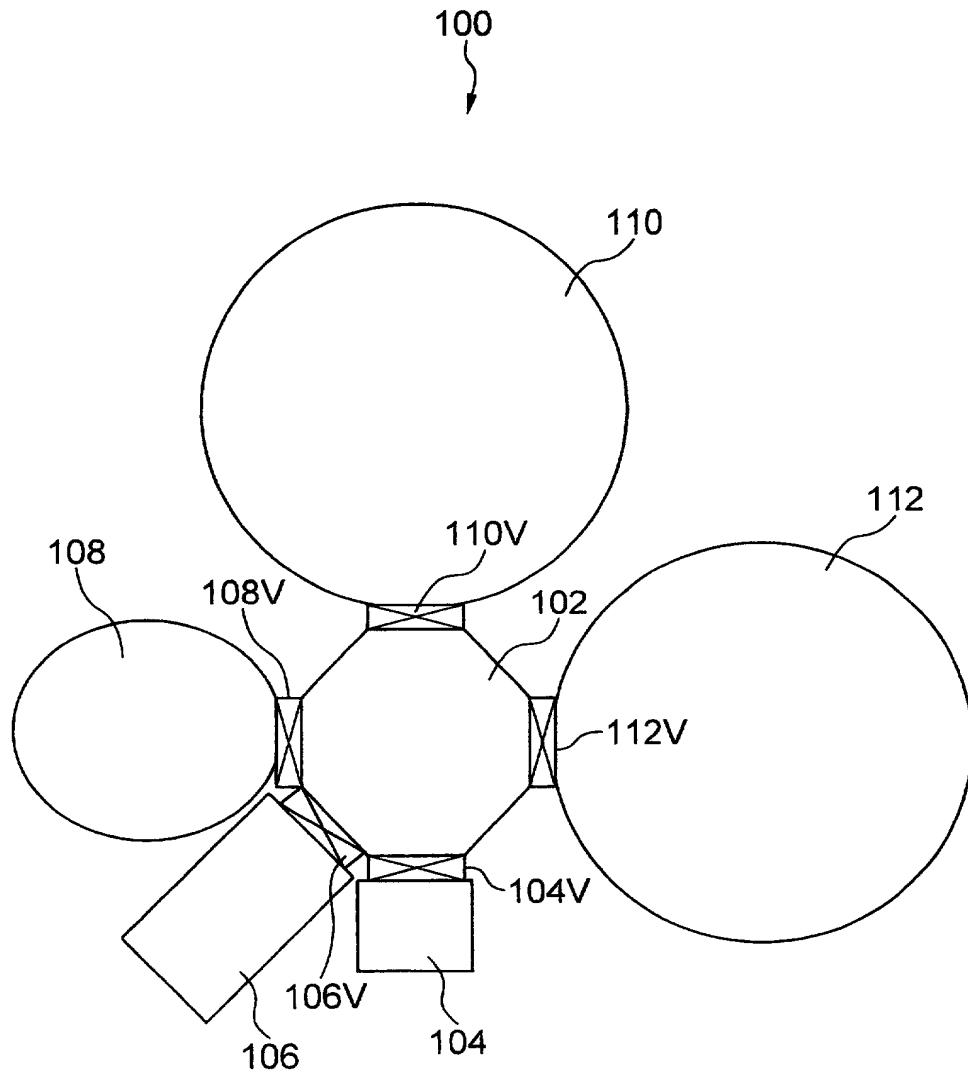


FIG. 1

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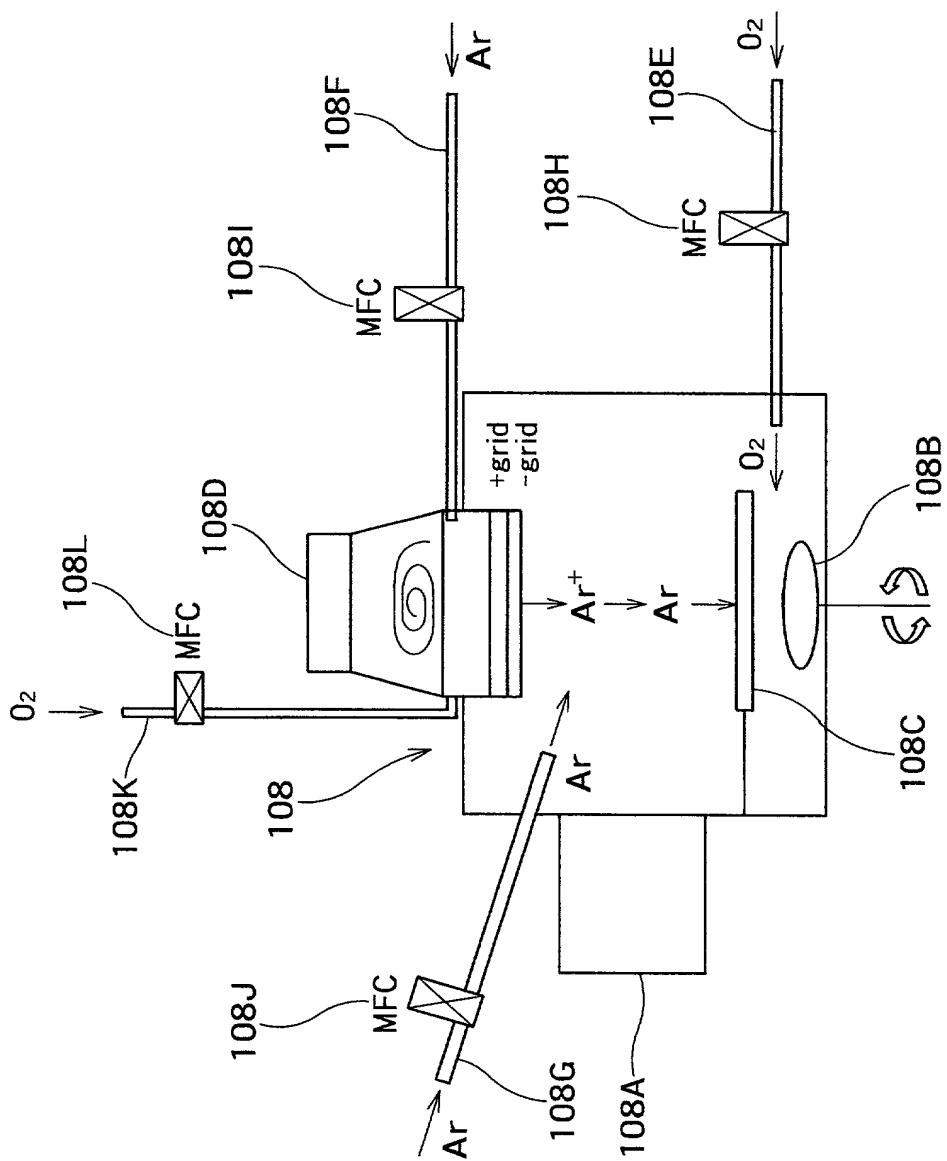


FIG. 2

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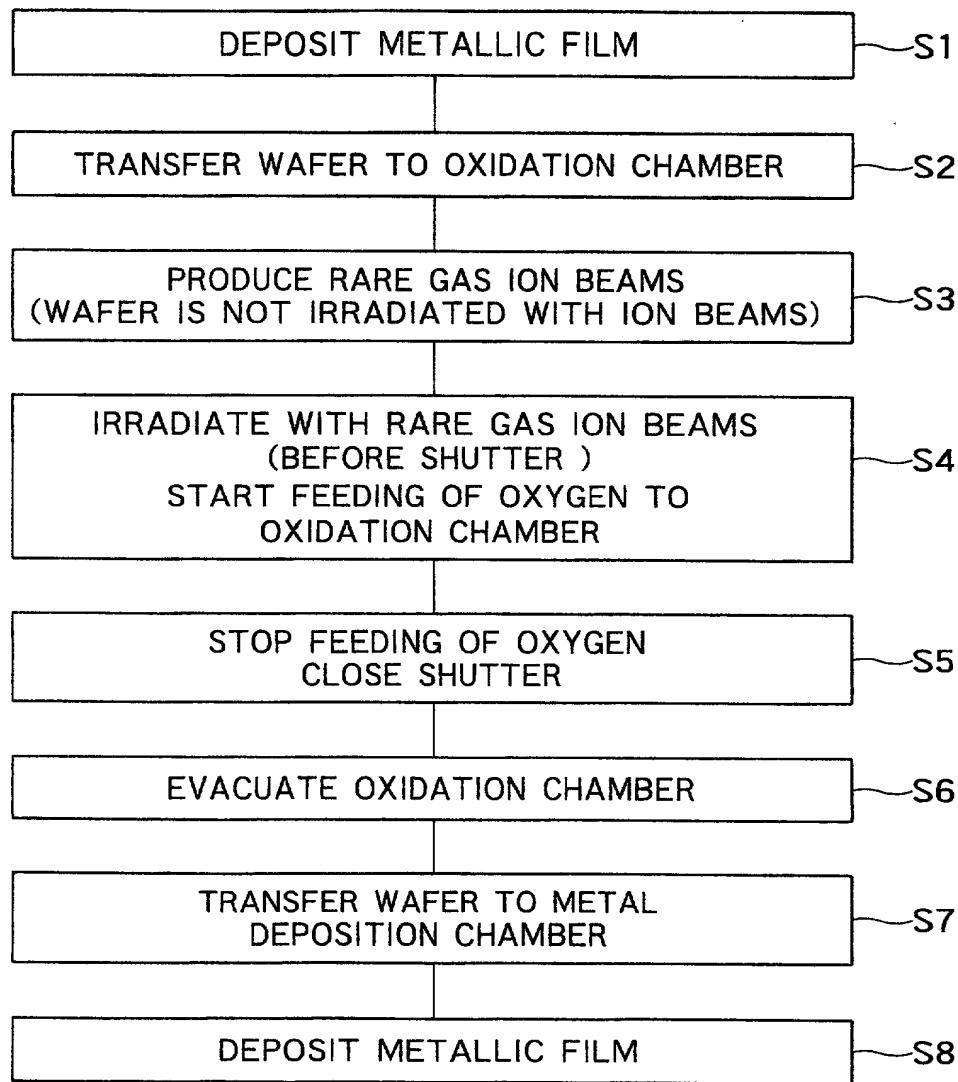


FIG. 3

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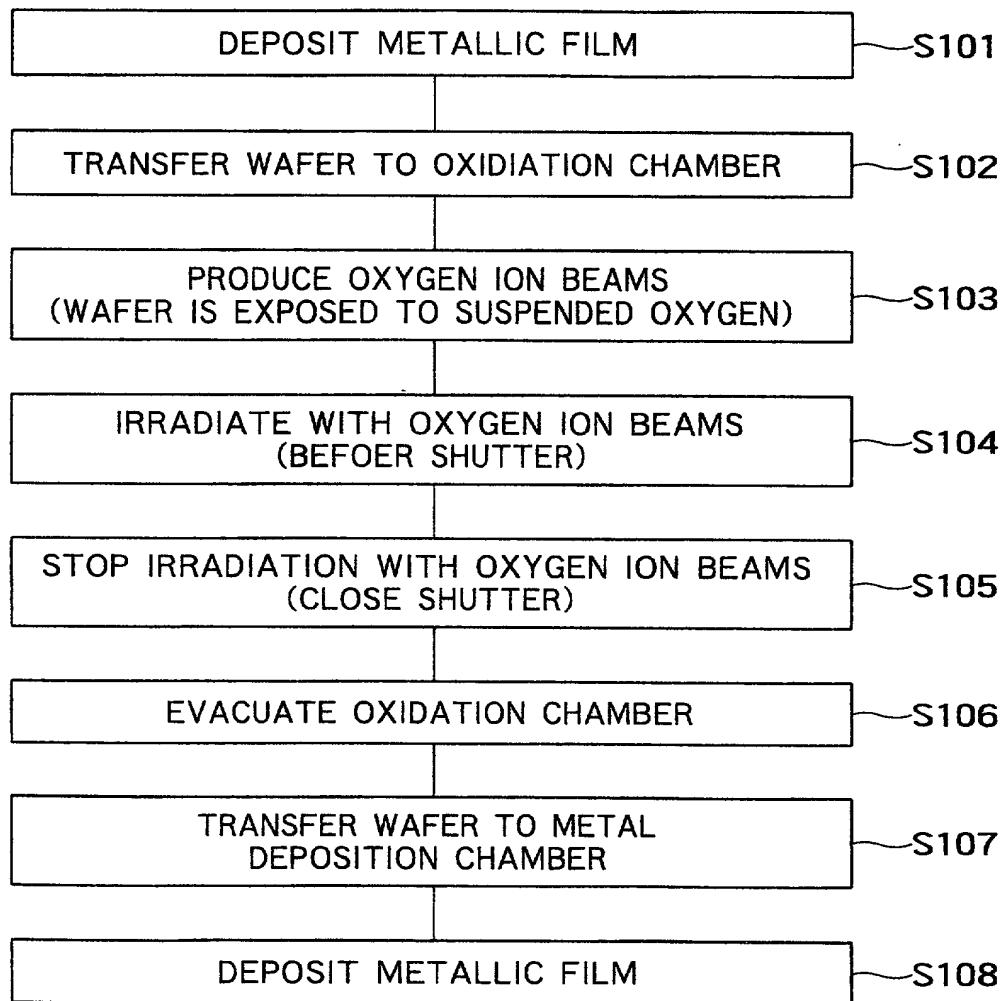


FIG. 4

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(a)	(b)	(c)
SMALL Ar ENERGY (NO METAL MILLING EFFECT) $V_+ \sim 50\text{eV}$	OPTIMUM Ar ENERGY (METAL MILLING EFFECT EXISTS) $V_+ \sim 100\text{eV}$	MAXIMUM Ar ENERGY (LARGE METAL MILLING EFFECT) $V_+ \sim 150\text{eV}$
ONLY DESORB OXYGEN ABSORBED INTO SURFACE OF FILM BY IRRADIATION WITH Ar	CUT BONDING TO SURFACE METAL BY IRRADIATION WITH Ar TO MAKE ACTIVE SURFACE TO PROMOTE RE-BONDING TO OXYGEN	STRONG MILLING EFFECT BY IRRADIATION WITH Ar SURFACE OF METAL IS SCRAPED WITHOUT FORMING OXIDE
OXIDIZATION REACTION NOT HAPPEN	NO SUSPENDED OXYGEN, STABLE OXIDE IS FORMED	

FIG. 5

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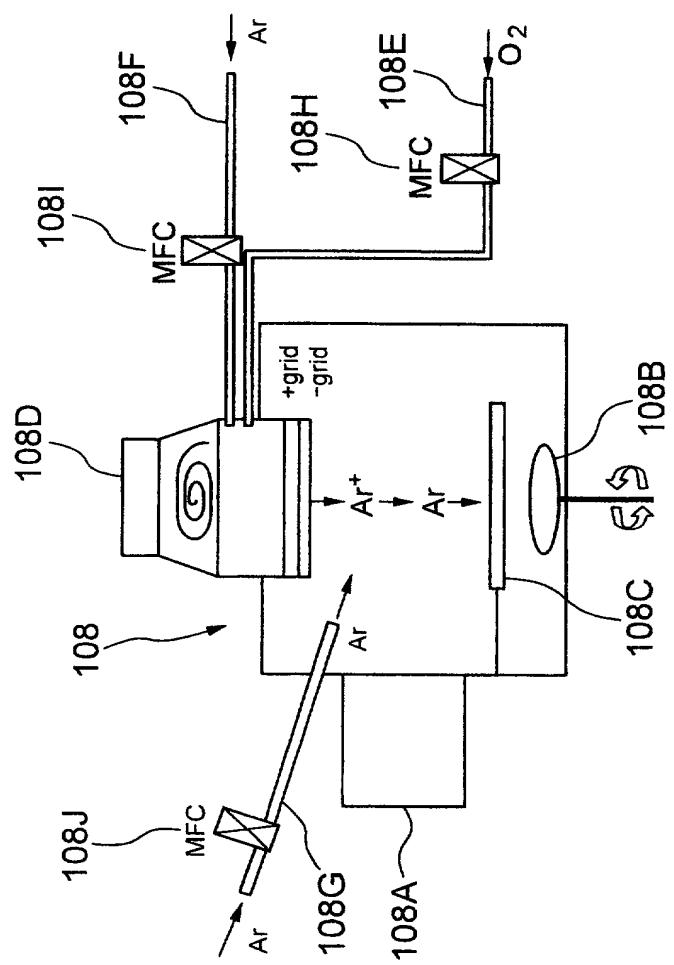


FIG. 6

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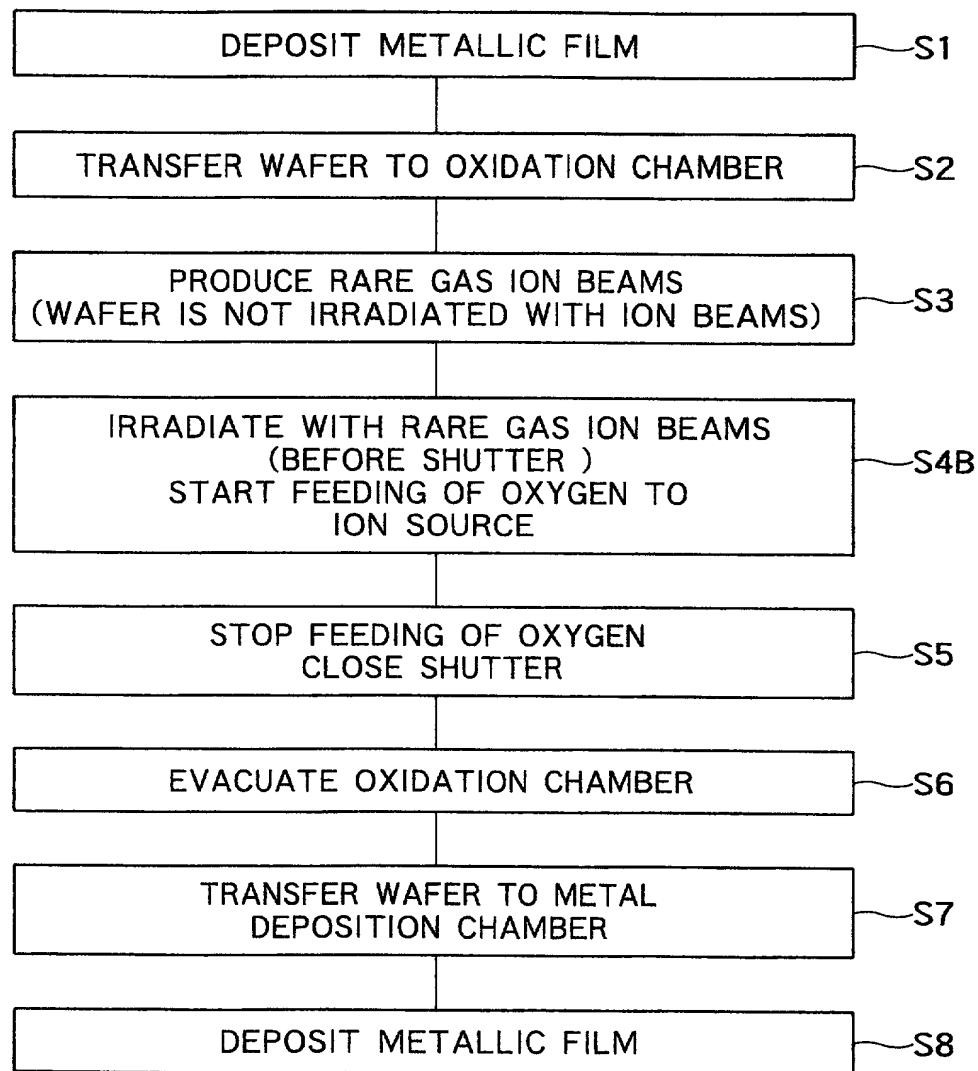


FIG. 7

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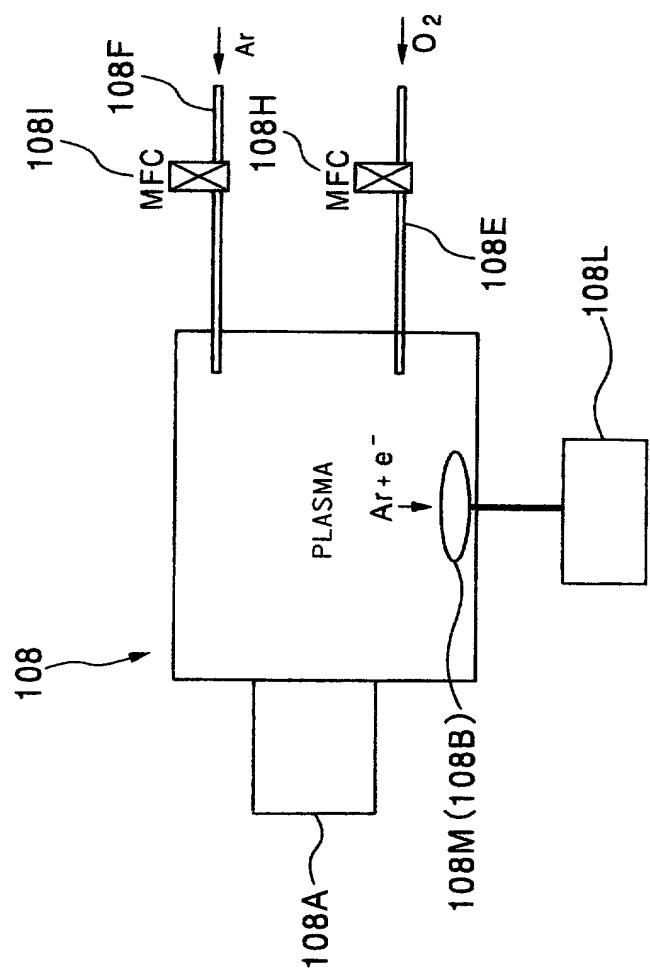


FIG. 8

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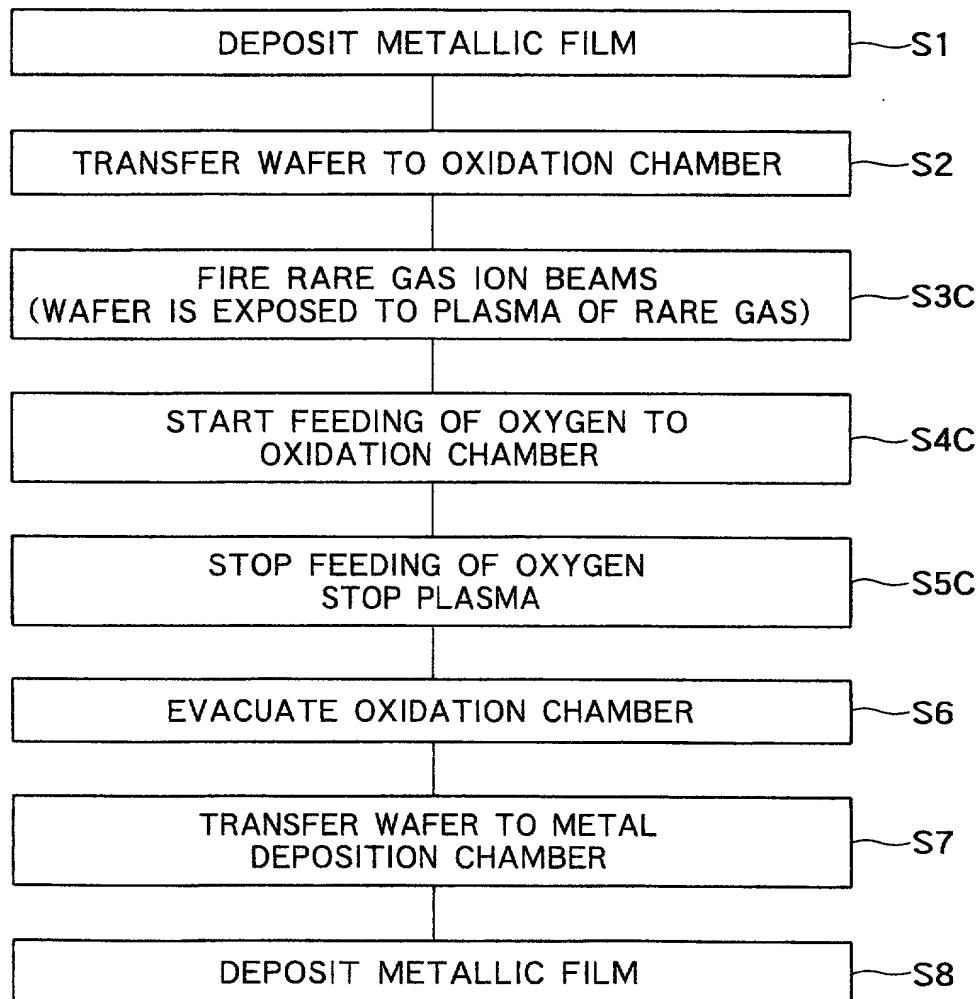


FIG. 9

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FIG. 10

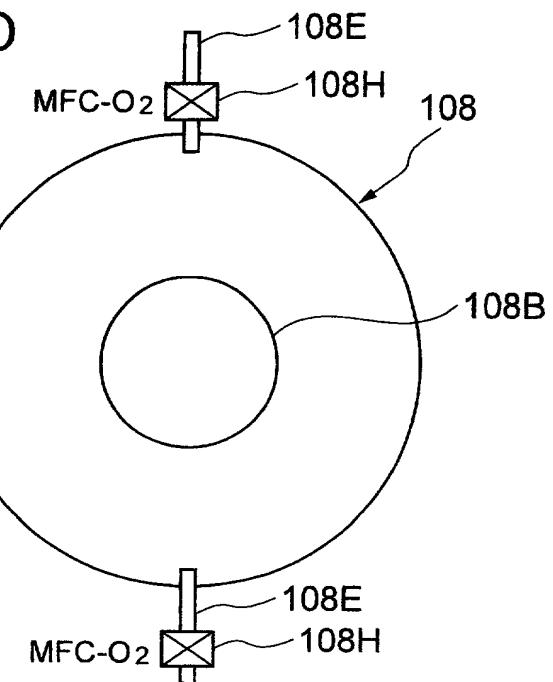
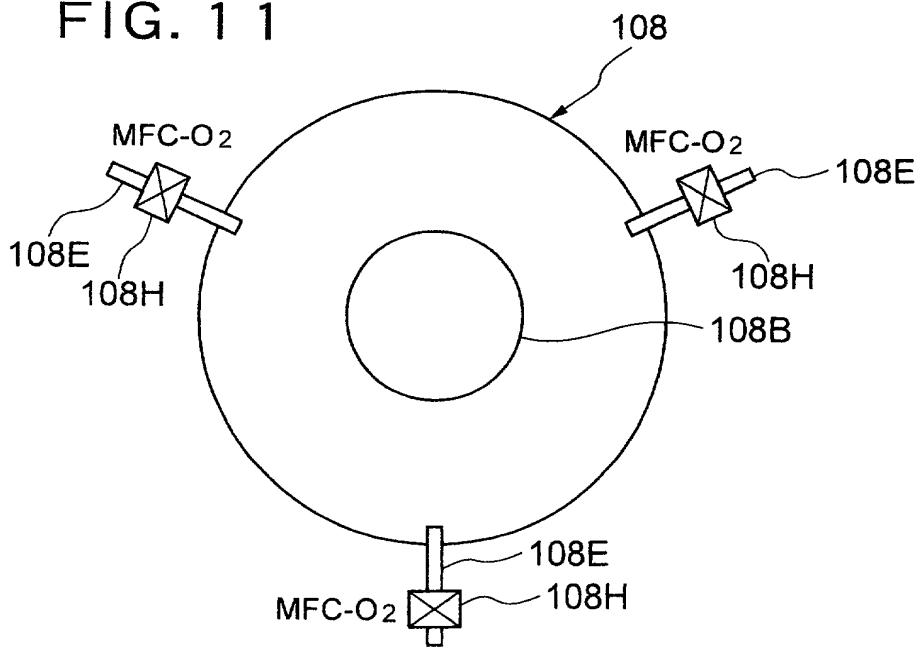


FIG. 11



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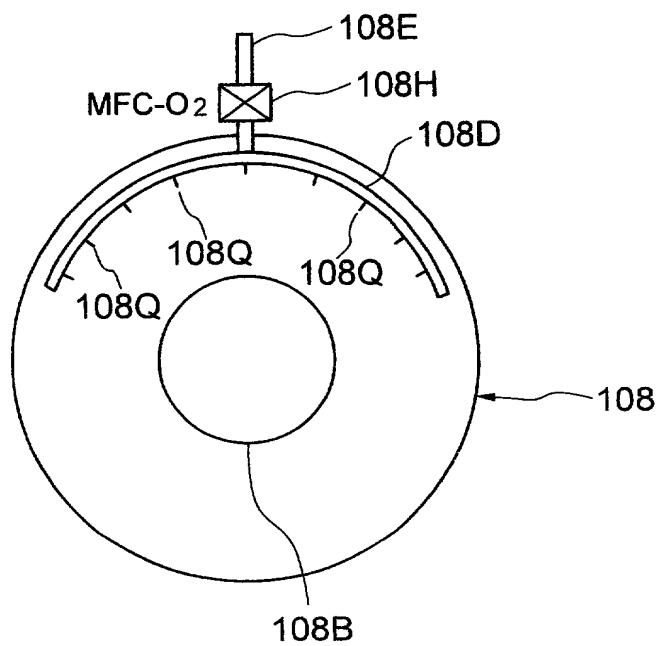


FIG. 12

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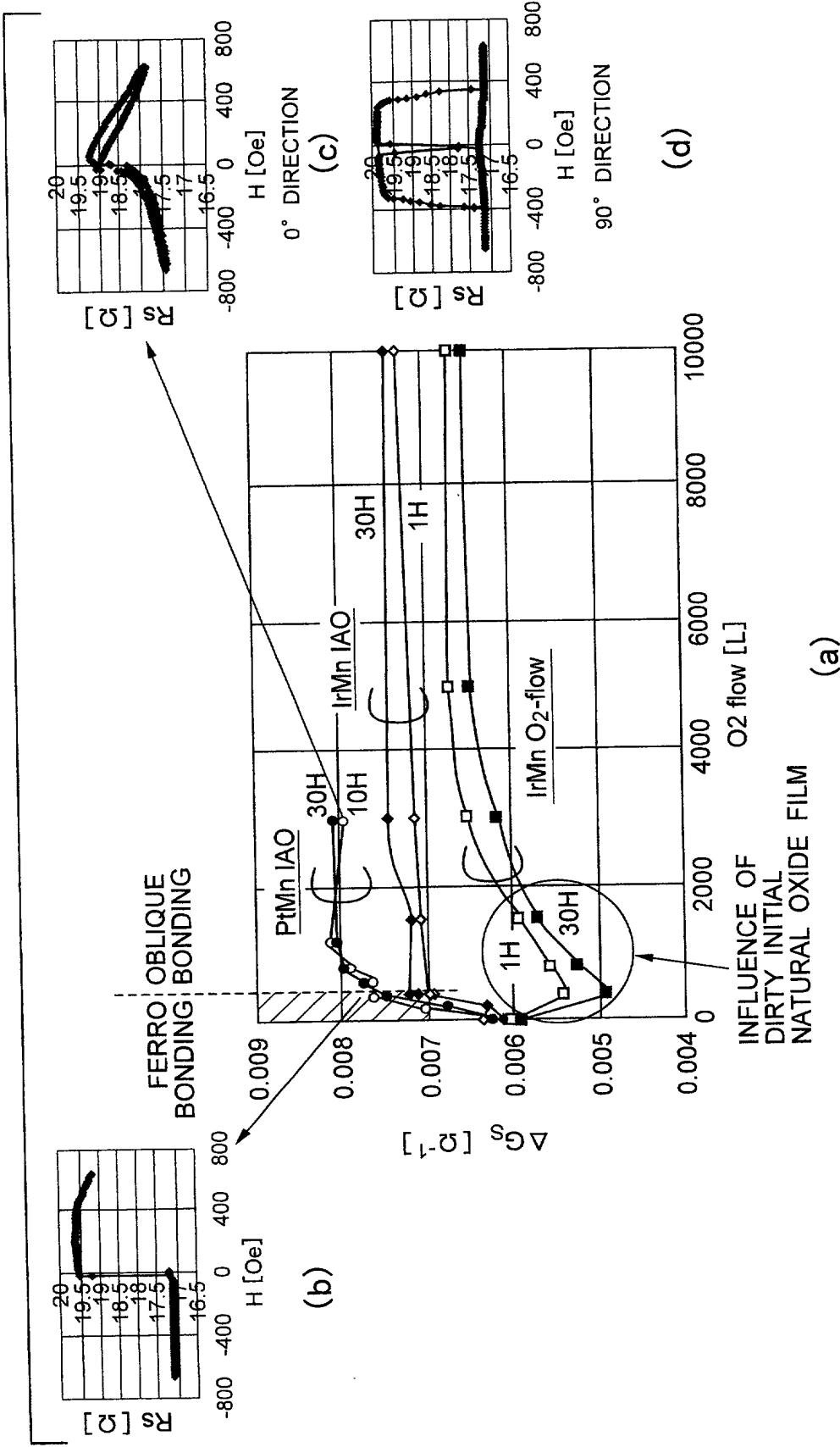


FIG. 13

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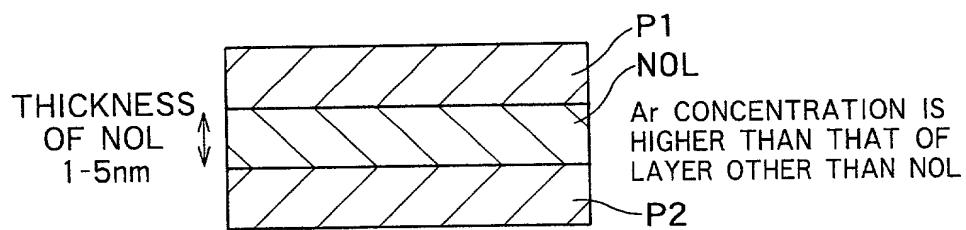


FIG. 14

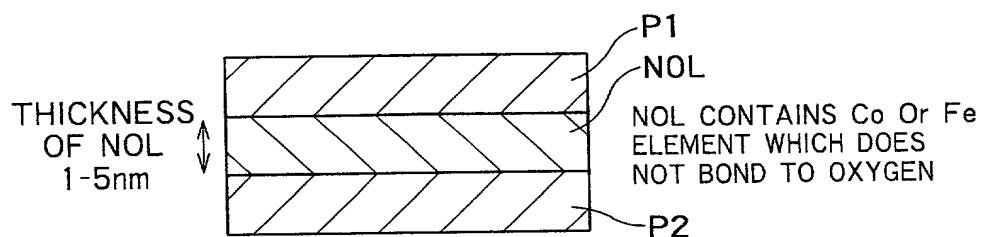


FIG. 15

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SENSE CURRENT

Free-NOL (1.5)
Spin-filter (Cu 1)
Free (CoFeNi 2)
Spacer (cu 2)
Pin (CoFe 2)
Pin-NOL (1.5)
Pin (CoFe 0.5) Ru 0.9
Pin (CoFe 1.5)
Antiferro (PtMn 10)
Seed (NiFeCr 3)
Buffer (Ta 3)

FIG. 16

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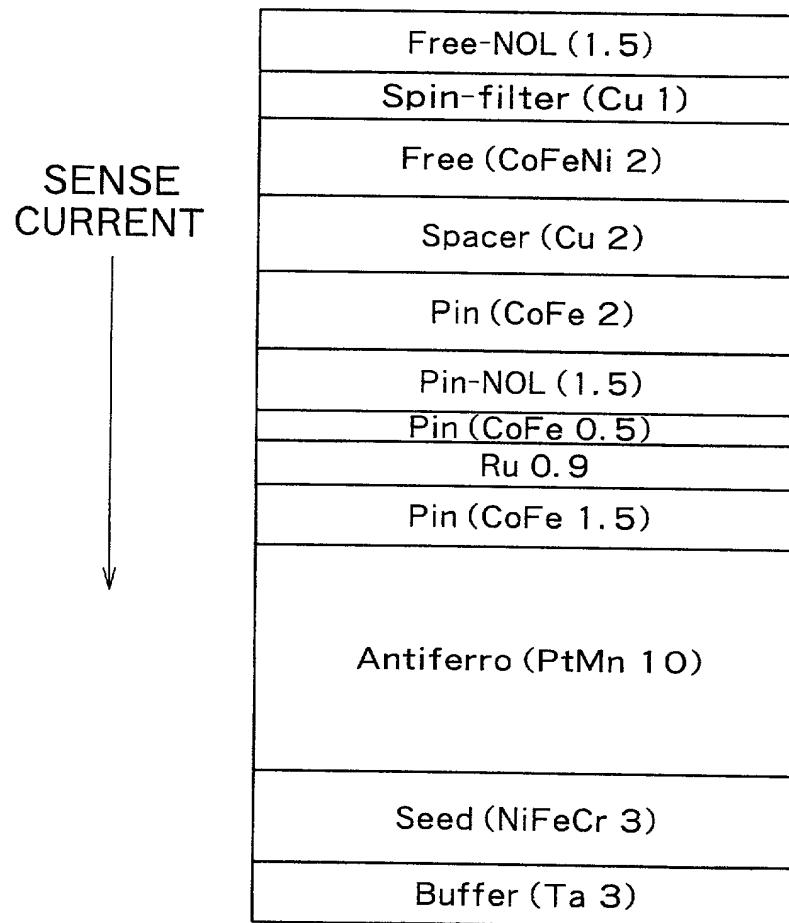


FIG. 17

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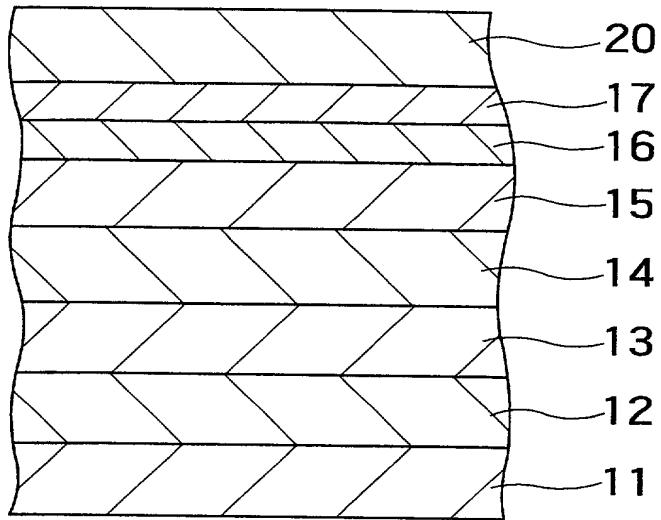


FIG. 18

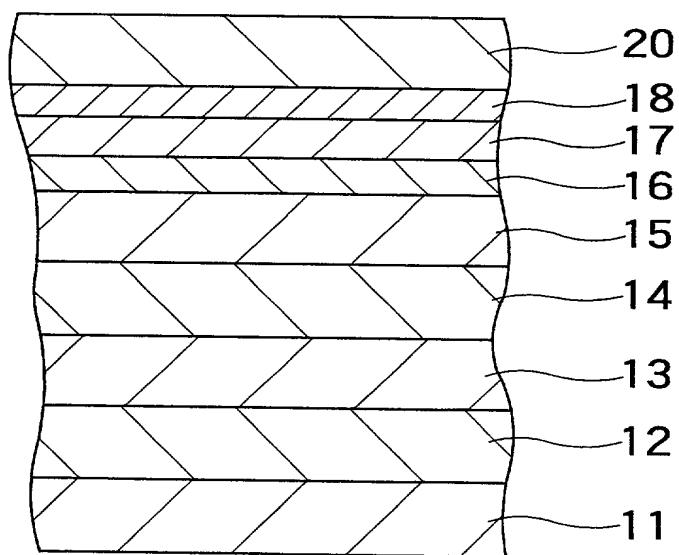


FIG. 19

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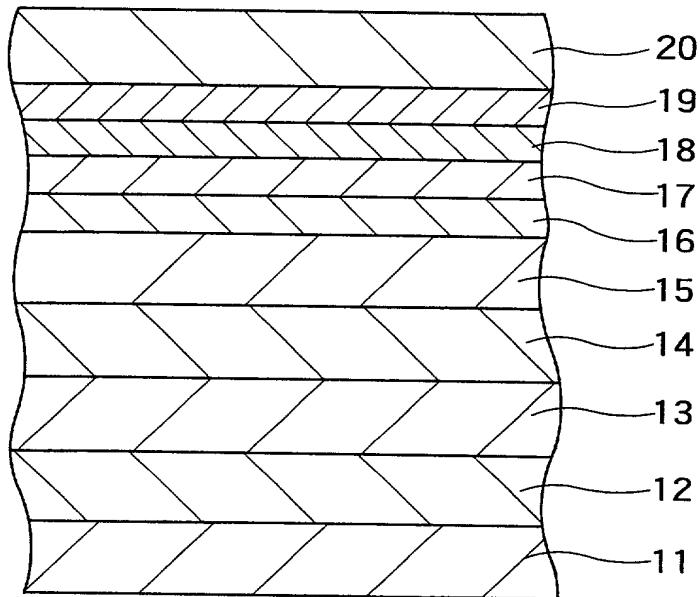


FIG. 20

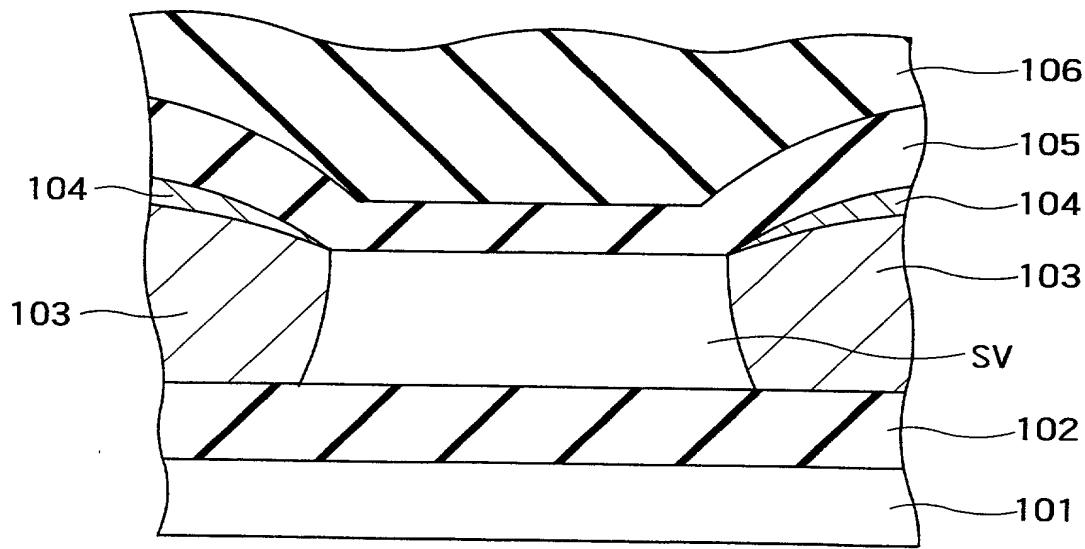


FIG. 21

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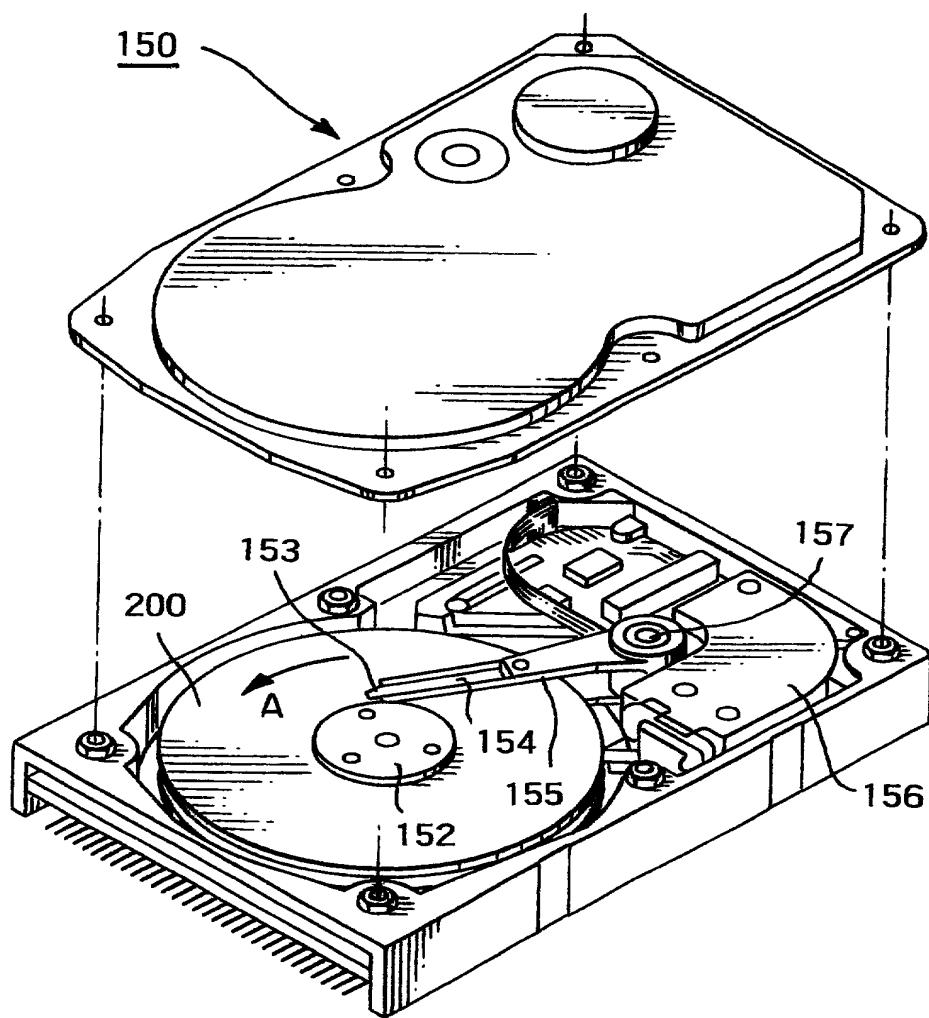


FIG. 22

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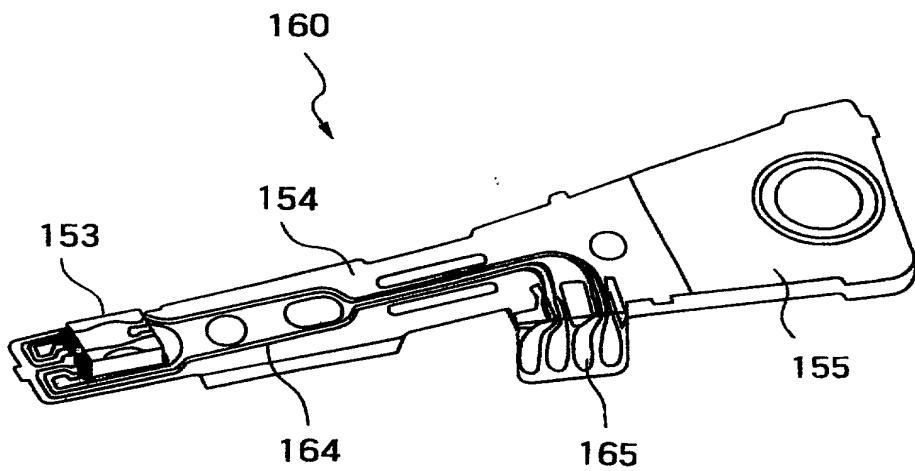


FIG. 23

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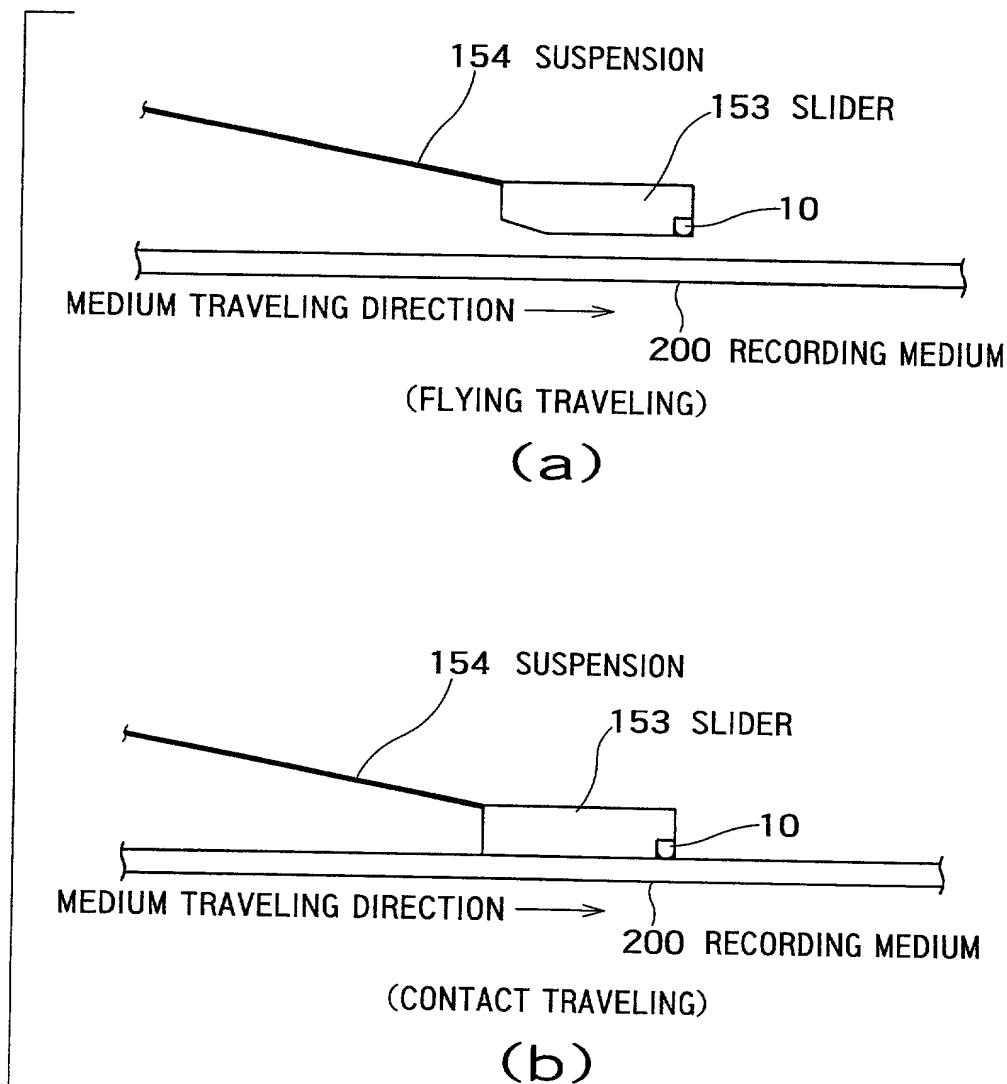


FIG. 24